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WHAT IS NATURAL?

[Home-Talk by J. H. N., July, 1868.]

LET us study human passion in the way of ascertaining what is natural and what is unnatural. It is certainly natural for man to love woman—there is no mistake about that. But the world has come to think that it is also natural for man to be jealous: is that so? The world thinks it natural for man to be greedy and prone to excess in love. It is thought natural for man to claim property in love—to select some one, and say, *this woman is mine*; and so that duality in love is natural. There is as much certainty in the public mind that property in love is natural, and of course that jealousy is natural, as that love is natural. All the turbulent forms of love that render men tenacious, and breed discord, and exclude all hope of harmony, are supposed to be natural, constitutional, and incurable. Simple love by itself, is not conceived of. Love in the greedy, excessive, appropriating form, is considered the correct style. And finally the world has come to consider love in any other shape than that, as unnatural and vicious. Love in the greedy, egotistical form that claims property and of course makes dualities necessary, is virtue; but love in other shape than that is termed vice. Here is matter for investigation.

As I said, there is no doubt that love in itself is natural; that is provided for in the human constitution. God evidently intended it, and man and woman would be monstrous if they did not love each other; they would not be man and woman. But it is an open question whether the elements that breed discord and mischief belong to love and are natural. I demand thorough investigation. I say these are tares; "an enemy has sown them;" they do not belong in God's field. If man is a creature of God and lives in God's universe, under the patronage of the power that guides the universe, then those things that are pleasing to God are natural and easy, and those that are not pleasing to him cannot be easy

or natural, but must be forced and unnatural. Most certainly it will be found that whatever is in opposition to the main element and government of the universe, is unnatural.

Things that are natural have the sanction of God; that is the meaning of the word, if we have an intelligent understanding of it. A thing that is natural, is a thing that God has made arrangements for, and that will flow in harmony with his design and spirit, and the whole machinery of the universe. So that if greediness, salacity, jealousy, and exclusiveness are said to be natural, they are brought right into the center of God's arrangements, providence, and spirit, and are secure in their hold on human nature.

The world believes it is natural for man to die; and that is certainly the proper complement of the idea that it is natural for man to be selfish. But it is natural for brutes to be selfish and *perish*; and what business has man with his hope of salvation after death, if he is naturally selfish like the brutes?

If it is natural in the only intelligent sense of the word, i. e., agreeable to the arrangements of God, that men should be selfish, people ought not to try to reform the world. I should not feel myself justified at all in trying to bring the world into an unnatural state. I maintain that when men are in a selfish state, they are no more in a natural state than Jonah was in the whale's belly. They are in the devil's belly; and there is no more nature in one case than in the other.

Christ came and broke the rule. His life and existence on earth refuted the whole theory that pronounces sentence of incurable depravity on man. He broke that law of nature; and he has got his insurrection against it recognized as far as he himself is concerned. Now we must press the point, and insist upon it that Christ was a natural man; that what is really natural to humanity was manifested in him; that he is a real standard of what is natural, and all deviations from the character that he manifested are the exceptions. By one example we have at least found out what is natural to man. "As in Adam all die, so in Christ shall all be made alive."

FATHER HYACINTHE.

AT a recent meeting of the Evangelical Alliance, in New York, Rev. Leonard W. Bacon, of Brooklyn, announced that he was translating for publication several discourses of Father Hyacinthe. In connection with this announcement he read a letter from Father Hyacinthe, remarkable not only for the good spirit

displayed, but also for its noble recognition of the Christian religion as an interior, spiritual bond which unites all who are subjects of "the grace of the same God, the blood of the same Christ, the hopes of the same eternity." The following is an extract from the letter:

REVEREND SIR:— * * * * * I am proud of my France, but I deem it one of its most solid glories to have contributed to the independence of this noble country, which it has never ceased to love, and which it shall some day learn to imitate. A people with whom liberty is something else than a barren theory or a bloody practice; with whom the cause of labor is never confounded with that of revolution, and never divorced from that of religion; and who, rearing under all forms and all denominations its houses of prayer amid its houses of commerce and finance, crowns its noisy and productive week with the sweetness and majesty of its Lord's day. "And on the seventh day it ends the work which it has done, and rests the seventh day from all its work which it has made."

I remain faithful to my Church, and if I have lifted up my protest against the excesses which dishonor it and seem bent on its ruin, you may measure the intensity of my love for it by the bitterness of my lamentation. When He who is in all things our Master and our example armed himself with the scourge of cords against the profaners of the Temple, his disciples remembered that it was written, "The zeal of thy house hath eaten me up." I continue faithful to my Church, but I am none the less sensible of the interest which will be taken in other churches in what I may say or do within the pale of Catholicism. Furthermore, I have ever denied that the Christian communions separated from Rome were disinherited of the Holy Ghost, and without a part in the immense work of the preparation of the Kingdom of God. In my relations with some of the most pious and the most learned of their members, I have ever experienced in those depths of the soul, where illusion is impossible, the unutterable blessing of the communion of saints. Whatever divides us externally in space and time, vanishes like a dream before that which unites us within—the grace of the same God, the blood of the same Christ, the hopes of the same eternity. Whatever our prejudice, alienations, or our irritations, under the eye of God who seeth what we cannot see, under His hand which leadeth us whither we would not go, we are all laboring in common for the upbuilding of that Church of the future which shall be the Church of the past in its original purity and beauty; but shall have, besides, the depth of its analysis, the breadth of its synthesis, the experience of its toils, its struggles and its griefs through all these centuries. * * *

FATHER HYACINTHE.

The *Northwestern Christian Advocate*, in an article on "The Pulpit of Notre Dame," has the following, relating to the same celebrity:

At the inauguration of the convocation of the Peace League held in July last, Father Hyacinthe seated himself between an evangelical minister and a Jew—a strange place indeed for a bare-footed monk, with cowl and gown. His simple presence on such an occasion, with such surroundings, seemed eloquent enough.

But he soon rose to speak, and, warming into impassioned eloquence, he referred to words of peace uttered in one of his Advent sermons, and extended his hand to press that of Protestant and then that of Jew; and as he warmly shook the latter's hand, he said:

"Gentlemen, have you ever met a Jew without recognizing him? Have you not often on such an occasion admired the strange, beautiful, and at the same time, sad and attractive countenance, with an eye full of intelligence and passion? You must admit, though perhaps unwillingly, that here flows a blood—pure, proud and aristocratic—that has descended through all ages and races down to our time, without mingling with other blood. Have you, men of thought and teachers of civil and political wisdom, well studied the peculiar organization of the Jewish family?" Taking this for a text, and alluding in passing to the Jewish state and monarchy, priesthood and temple, he presented the Jewish family as a greater power than all other, and one that had withstood the barbarism of the middle ages, and the cruelty of modern revolutions—a power that consists in the tradition of its blood and of its God. The audience were not slow in appreciating this eulogy of the Jewish family, on the part of a monk devoted to celibacy; and the Church accepted the applause as a thorn in its side. The eloquent friar concluded his allusion to the Jews by observing that divine love is more enduring than divine wrath, and repeated the beautiful passage: "Thou shalt bear my covenant in thy flesh, and thou shalt be through all generations the son of Jehovah."

Having thus spoken of the Jew, he turned to the Protestant at his side and said, among other things: "I have just returned from the Protestant land *par excellence*, and I feel obliged to bear testimony to the truth that in England I met not only good citizens, but also good Christians, as often as I pressed their hand, exchanged thoughts with them, and permitted my soul to mingle with theirs; and this one must do, if he would become acquainted with men. I know well there are boundary lines—there is, indeed, if you wish, a gulf of separation; but does not faith remove mountains, and love fill up chasms? Violent debates, bitter controversies, will not restore unity; but love, benevolence, and the noble virtues of the truly Christian heart. Let me then extend my hand to them, press them to my breast—these sincere though erring Christians—sincere in their love to God, to Jesus Christ, and to men—and in this embrace will I repeat my song of praise. How good and glorious it is to be brothers, and live together, if not in the same body, at least in the same soul, in the invisible unity of the Church and Christ Jesus!"

OCCUPATIONS IN COMMUNITY.

PERHAPS many of the younger readers of the CIRCULAR say to themselves, "I wonder what I should occupy myself about if I went to live in the Community? Could I learn a trade there?" The boy who works on his father's farm fancies himself, it may be, in the machine-shop; while the girl who is now acting as dairy-maid or seamstress, thinks it would be pleasant to spool various colored silks on a fast little machine. Our circumstances in regard to labor are so different from what they are in ordinary society, that I will tell those who want to know, how I have fared in this respect.

My mother brought me to the Community when I was only ten years old—a slender boy, growing rapidly. I remember very well that sunny afternoon in September, eighteen years ago, when we clambered out of the stage-coach and walked up the lawn, past the great butter-nut tree, to the mansion. I caught sight of a pack of boys and girls playing merrily with lit-

tle wheel-barrows, wagons, and hoops, and I was uneasy from that moment until I was allowed to join them.

The Community family was comparatively poor in those days, and the boys and girls did not have all the advantages they now have. Nevertheless, we were put to school several hours every day, and were very well provided for. The boys had sundry small chores to do, such as getting a supply of kindling material and wood from the wood-shed, for the stoves in the kitchen and other public rooms. We also helped the grown people by picking the strawberries, pulling bean-vines and making them into little stacks, packing shingles, etc. The Community owned a saw-mill then, as almost all Communities do at first (you will notice this when you read Mr. Noyes's new book on "American Socialisms"), and the boys used to pack into bundles the shingles which the men sawed out. I remember that when we picked strawberries for the first time, Mr. Perry, who was superintending us, after waiting a long time for me to hand in a full quart, good-naturedly said he guessed I ate rather more than I picked! I had not been accustomed to strawberries, and was not very skillful in saving them. Among other things we painted the horse-barn. That was capital fun. We daubed as much as we liked. Furthermore, we studied some other arts besides painting.

My father was an amateur musician. He played on the violin, taught singing school, and led the choir in church. I must have inherited a tendency for music, for about this time I was seized with a desire to play on the violin. The man who was then "father" at the children's house had a violin, and very kindly allowed me to take it, and taught me how to begin, as well as he could. I found an old music-book and commenced scraping away on a tune called "What Fairy-like Music," picking it out note by note. At the end of a fortnight I had mastered the first four bars, after my fashion. The strain of acquiring them had been so great that I relaxed a little at that point, and contented myself with playing these four bars over and over. I imagined I had done a pretty fine thing, and took occasion to make myself rather conspicuous with my achievement, until I was rid of my delusion by hearing one of the ladies, whose nerves it seems I had over-taxed, speak about "that noise" as dreadful! Wholesome truths often have a bitter twang. Her remark opened my eyes to the fact that my music was not particularly "fairy-like," and it also nerved me for the effort by which I learned another four bars. The acquisition of these made my performance somewhat more endurable. So I was encouraged and went ahead. Several other boys learned to play on the violin, flute, &c., about the same time.

Thus we lived and grew, going to school, and doing besides various little jobs which needed doing, until I was in my fourteenth year, when I was set to work in the trap-shop. There I began by learning to cut threads on the jaw-posts of the traps, to drill, and to sweep the shop. At that time we did not make chains for the traps, but it was decided to do so, not long after, and I was taught to weld the wire links together at a little forge-fire, on an anvil made expressly for the business. After a time I was

succeeded by one of the other boys, and I went to work on the steel trap springs. There was some discipline in that. The great points to be learned were, that steel is spoiled by over-heating, or by hammering when too cold. Blacksmiths usually impress this latter point on beginners by repeating to them a rough old legend to the effect that only one blacksmith ever went to hell, and he was sent there for hammering cold iron. We did not use bellows such as blacksmiths ordinarily use, but had a blower driven by water-power, so all we had to do was to open a valve. For a long time I was liable to forget myself after putting some springs in the fire, and leave them there until they were burned, and the fire all in a sparkle with melted steel.

I continued to work in the trap-shop more or less for eight years. During this time I spent two or three summers on the farm, and one in the horticultural department, where I was chiefly engaged in tending grape vines. On the farm I learned to mow with a scythe, to operate a horse-rake, and to dig ditches. I also milked several cows night and morning.

When I was about twenty-one years old, we had our great time with the diphtheria. Among others our dairyman was suddenly prostrated, one Sunday morning, by the disease. That same morning, as I was sunning myself on the portico of the new brick house, I was hailed by a member of the appropriating-help-committee, who inquired if I was willing to act as dairyman until uncle Heman recovered from the diphtheria. I agreed to do so, and in about ten minutes was rigged out with a long white apron, engaged in straining milk. Then followed churning, and I became gradually intelligent on the subject of cream, sweet and sour. This pleasant occupation lasted only a month, however. Uncle Heman recovered and resumed his place. Singularly enough there occurred a vacancy in the house-cleaning corps at that precise time, and I was destined to fill it. The women of the corps were downright, thorough, Yankee housekeepers, and had just begun the fall campaign. What zeal they manifested! I served an apprenticeship of four weeks at the business, and learned a lesson. The principal duties were, bringing clean water, taking up and putting down carpets, mounting on a high stool and scrubbing remote portions of the wood-work, sweeping down some real, and many imaginary, cobwebs, etc., etc. Although I am afflicted with a slight constitutional apathy on this subject, I managed to throw so much enthusiasm into these performances as to draw from the women an occasional eulogium. The end came at last, when the whole house had been gone over, and as if to reward me for trials undergone I was installed as subordinate book-keeper, a thing I very much desired. Then followed a year and a half of writing out bills, copying them into the sales-book, writing the accounts of the hired workmen into their pass-books, selling refreshment tickets to summer visitors, and similar operations.

In May 1865 I was sent to our New York Agency as book-keeper. There I learned how banks do their business. I paid bills, made collections, and sold silk, besides the book-keeping. A short time before we left New York I had a chance to take a short course of lessons of Mr. Poznanski the violinist. Having played

the violin in the O. C. orchestra for several years before going to New York, I was prepared to appreciate this. I hope I have since entertained people enough to at least counterbalance the misery they endured while I was learning. I returned to Oneida with the other men of the Agency in May 1868, and then gravitated into the trap shop, where I am at present engaged, as foreman of the finishing department, alternating with a comrade, each of us having a half day for education.

Thus you see I have been successively, boy, trap-maker, farmer, horticulturist, dairyman, house-cleaner, and book-keeper. Most of the other boys have progressed through an equal number of diverse employments, and some through many more, and of higher rank. The fashion of change and rotation in business is so popular in the Community, that I have every prospect of sometime becoming house-builder, wagon-maker, dentist, weaver of silks, and so on, the acquirements depending mainly on my enterprise and faithfulness. F. W. S.

ON THE ROAD. BY AN O. C. AGENT.

III.

IN recalling the early beginnings of our general business and manufactures, seventeen and eighteen years ago, as I did in the incidents of my article in the last CIRCULAR, two things involuntarily suggest themselves: First, the connection which John R. Miller sustained to those beginnings; and secondly, the contrast between then and now.

Touching the silk business, there was no one more intimately associated with it than Mr. Miller. It was introduced among us by his suggestion, and while he lived made to grow under his fostering care. The following extract from one of his letters, under date of April 25, 1854, will show its status at that time:

"Three years ago we commenced this business, feeling quite green in it, and bought our silk of Mr. W— (a Syracuse merchant) at sixty cents per hundred. Our peddlers took from twenty-five to fifty dollars worth of goods, and sold at private houses. Now, after three years' experience, they take three hundred dollars worth each, and supply the class of men that we bought of to commence with. This is quite a change."

The above was written about two months before Mr. Miller's death. The "three years' experience" of which he speaks, were years of toil and trial, and had it not been for the enthusiasm and hope there was in him, and with which he inspired others, it might be a question whether the silk business of the O. C. would to-day have any history to record. Be this as it may, the Community are ready to give large credit to Mr. Miller as the instrument of Providence in starting the business.

During that early period we scarcely expected to attain to the dignity of silk manufacturers. If Mr. M. and others dreamed of such a thing, they did not venture to say much about their dreams. Then we bought and sold only, and were thankful for the smallest favors. Now, notwithstanding that we suspended the business for two or three years, we have become manufacturers, and our monthly sales amount to over ten thousand dollars.

Our trap business, like our silk business, has an early history to record; and as I was directly connected with the original introduction of our traps into the Western country, I will tell the story of

MY SECOND TRIP.

In May, 1852, through the skill and labor of Mr. Newhouse, and I think Mr. Perkins and Joel Higgins, the Community had in stock some twenty-five dozen muskrat traps. In disposing of these traps it was decided to send me out West, in company with Mr. C., who was to sell silk. Previous to this Mr. Newhouse had acquired something of a reputation

as an excellent trap-maker, and through a New York house a few of his traps had been sold West; but for the most part up to this time his transactions in this line had been of a local character. The season was unfavorable, and there were misgivings as to my success.

We spent about two days in Buffalo, and, sample in hand, I did my best with the hardware trade. Pratt & Co. treated me courteously and showed me through their, to me, immense establishment, but they bought nothing. The same was true of other parties. A clumsy German trap, or an inferior home-made article, monopolized the field, and I did not sell a trap in Buffalo. After some deliberation, Mr. C. and I decided to ship the traps by the great lakes to Chicago, while we would take the shorter route. I tried the market in Detroit and Kalamazoo, but ineffectually.

On arriving in Chicago we found the traps had not reached their destination. The population of the city then numbered only thirty thousand; now I am told that it falls little short of two hundred thousand. Its rapid growth had then given it the name of Mushroom city, and in the annals of Western life it was considered a prodigy of existence.

The next morning after our arrival, with the "Oneida trap genuine" for my companion, I commenced canvassing the hardware portion of the city. The "Oneida trap imitation" was then, of course, unborn. The house of W. F. Dominic & Co., had by correspondence made inquiries about the "Newhouse trap," and I naturally called there first; but as Mr. D., the only member of the firm who understood the case, was in New York, and the season was unpropitious, I met with a polite refusal. Appearances were discouraging enough: I made the round of the city, with no luck. The market was glutted, and every thing was against me. One house, while in conversation, used language which to me seemed discourteous, and I left with a heavy heart. I cannot complain, however, at this remote period, as that same house has since invested quite heavily in the Oneida trap. Thus I spent two or three days in what was next to a hopeless undertaking; yes, I might say two weeks, for it was about that time since I had left home. Yet there was hope in me, and I would not give up.

Meanwhile, the box of traps had come to hand, and as a last resort I called again on W. F. D. & Co. Mr. L., the junior partner of the house, gave me a cordial welcome, and on two conditions offered to take the goods. First, I must get Mr. Morse, who was a judge of traps, to pronounce his opinion; and secondly, if his opinion was favorable, as the goods must lie on their hands until the fall trade, a discount on the price must be allowed. I consented to these proposals, and started immediately for the suburbs to find Mr. Morse. I shall not soon forget with what alacrity I climbed up the flat roof of an old board-shed, where I found the above named gentleman curing raw furs. I soon arranged with him to meet me at 5 P. M., at W. F. D. & Co.'s. With me the traps were already as good as sold, for I knew they were a genuine article. Thus daylight appeared. At 5 o'clock, I called round as agreed, but found Mr. M. had already preceded me, and left. His verdict was every way favorable. He said it was the best trap he had ever seen, and so the bargain was closed. The next day I mailed a draft on New York to the O. C., amounting to \$125.00, the proceeds of the sale.

The above transaction proved to be but the beginning of an extensive trade with this company. Two years later their purchases had amounted to several thousand dollars. During the present season, the receipt of an order for eight or nine hundred dozen traps at a time, from certain Chicago houses, ceases to excite our wonder. But we do not forget the providences of God which have superintended our finances.

THE use of nitro-glycerine is prohibited by law in Sweden, the country where it was first employed. A scientific Swede, of a statistical turn of mind, has computed that the explosion of a quarter of a ton of this mild mucilage would blow the entire territory

of Sweden into the middle of the Arctic sea. So the Rigsdag interferes, and burghers parade the streets bearing banners upon which is inscribed the Swedish equivalent of "No Glycerine."—*Utica Herald*.

It is said that experiments were lately made at the Botanic Garden, London, to see how much weight one of the smaller leaves of the "Victoria Regia" would sustain. It bore four hundred and twenty-six pounds before sinking. The leaf is exceedingly large, and the edges are turned up like the sides of a boat.—*Independent*.

THE SOCIAL PROBLEM.

RADICALS AND FIRESIDES.

The general reform movement which has been going on in the western world ever since the French Revolution, is reaching the last limits of what may be called the political stage, and the leaders in it are now engaged in deciding whether they will break completely with the past of the human race and attempt a reorganization of society on a new theoretical basis, or be content to let the individual work out his destiny under political equality, existing social traditions, and free competition. The value of the institutions of property and of marriage, the propriety of giving legal play to differences of capacity and temperament, are slowly but surely coming under question, and as they make their appearance in the arena, the historic reformers, as we may call the moderates, who will not advance without feeling the past under their feet, and who believe that human nature is stronger than constitutions or laws, begin to hesitate. The latter have, it must be admitted, the great body of the community at their back, and however much they may be worsted in the forum, find at the fireside abundant consolation for their defeats. The left wing of the radicals, who are mostly enthusiasts and speculators and men of the cities, always underestimate the *vis inertia* of the established order of things—the tenacity with which the body of every people cling to their old ways, and prejudices, and traditions, and the immeasurable gulf which separates the reformatory convention from the average householder, when it comes to the discussion of the distribution or accumulation of property, or the relation between husband and wife, or parents and children. When the French "Red," for instance, talks of a re-distribution of landed property on principles of pure justice, he takes no count of the four millions of French proprietors who are not only not open to conviction on this or any cognate subject, but would probably resist any interference with their rights—as they now exist—as long as there was a man amongst them able to shoulder a musket.

As long as reformers were occupied with political questions, they were on debatable ground, which has been fought over, in every age, with varying fortune by the two great parties which have existed in every political community since government began—the party of rest, and the party of advance—and one which men expect to fight, and expect to be beaten on occasionally. But in attempting to touch social questions with the finger of the law, they venture on ground which has hitherto been held sacred, and accordingly find arrayed in defence of it passions which neither political nor even religious controversies have ever been able to call forth, for they touch the *home*, perhaps the tenderest spot in man's moral constitution. "Pro aris et focis" was one of the earliest and most potent of battle-cries, even when all that those who used it had to fear was the temporary desolation of their hearths. Altars are no longer objects either of vigorous attack or of vigorous defence; but threaten men, however remotely, with the total abolition of the hearth as an institution, and they will find themselves face to face with an enemy whose very mercies are cruel.

—*The Nation*.

WORK FOR WOMEN.

We learn that a novel institution for women is to be opened in the neighborhood of Boston, as soon as the requisite funds are obtained. It is to be a horticultural school, and is designed not as a charitable institution, but a high-class school where thorough instruction in horticulture will be given to young women for such compensation as will, in the end, make it self-supporting, or nearly so.

The working plan of the school comprises a farm, to be procured in the vicinity of Boston, containing about twenty acres, five acres to be used for the cultivation of small fruits, flowers, salads, and such vegetables as are suitable for culture by female labor, the rest to be devoted to mowing and pasturage; a good plain dwelling house capable of accommodating about thirty inmates; a barn large enough for the farm stock, and an experimental plant house for growing flowers and early vegetables, and the forwarding of plants for field crops. The control of the institution is to be vested in a president, secretary, treasurer, and twenty-four managers—one half of

whom will be ladies—who will be aided by a competent instructor, an experienced farmer, and the necessary assistants. The pupils will be instructed in plain sewing, the use of the sewing machine, and in all kinds of housework, as well as in horticulture; and lecturers and teachers in kindred branches of labor and service will be employed from time to time.

It is intended to receive pupils to the number of twenty-five, who are from the age of sixteen upward, of good character, fair education, and able to work as may be required. The course of instruction will extend through two years. The estimated cost of procuring the farm and outbuildings and maintaining the school for three years, is \$30,000.

—*Scientific American.*

THE CIRCULAR.

O. C., MONDAY, NOVEMBER 22, 1869.

Mr. J. H. Noyes' work on AMERICAN SOCIALISMS, which has been in preparation over a year, is now in type, and will soon be published. It will be a handsome octavo volume of about 650 pages. We have not yet learned the price. The series of the same name, which appeared in the CIRCULAR, forms the ground-work of the book, but some alterations and many improvements have been made, and in its present attractive form it will doubtless be read by every one who desires to learn the true history of the social struggles of which this country has been the arena during the last forty years.

[The following appeared in the *Semi-weekly Circular* of May, 1868. It is as good as ever, and worthy of reprint.]

FOUNDATION OF COMMUNISM.

THE anonymous author of a book lately published, entitled "*Considerations on some recent Social Theories*," repeats the popular and hackneyed discouragements of Association, in the following terms:

"We will suppose a case where a whole society should voluntarily enter into one great Association. No one should have any separate cares; all private interests should be consolidated into the general interest of the society; and each associate should perform his part for the good of all, with no idea of special and personal gain. This world does not offer a fair place for the trial of such a plan; nor is it possible to suppose such an Association, composed of human beings. In order that it should go on harmoniously, some of the ruling passions of mankind must be blotted out from it. It must be a society of beings, free from selfishness, ambition, envy and emulation; while a thousand delicate and precious portions of human nature must be lost in the destruction of individual development. The motives which have been in force since the beginning of the world, must be changed. The only foundation of society would be the existence of a sentiment—a foundation too unstable even for a dream. A bright fancy may picture a glorious and happy Icarie, where there are no heavy toils, no dividing interests, no injustice among the inhabitants; but poor, persecuted, imaginative Cabot fluids in Texas or at Nauvoo the hard difference between the realities of men's intercourse with each other, and the illusions of his Icarian speculation."

The obstacle which this writer sees in the way of harmonious society, is, in old-fashioned language, *the total depravity of human nature*. He seems to hold even the oldest exploded form of this doctrine, which teaches that depravity is actually constitutional; for he calls "*selfishness, ambition, envy and emulation*," ruling passions of human nature, as though they were not mere *perversions* of good faculties and susceptibilities, but integral parts of the soul of man, which cannot be blotted out without mutilating the human being.

Or if the writer should disclaim this statement of his position, notwithstanding the appearance of his language, he would still admit, at all events, that his view is, that the depravity of mankind, though superinduced, and not constitutional, is yet a second nature, so universal and incorrigible that its eradication is hopeless, and consequently social harmony is impossible.

Speaking for ourselves, and not for other schools of Association, we answer—

We believe that Jesus Christ came into the world to save men in this world; and that the Kingdom of God CAN come, and the will of God CAN be done on earth as it is done in heaven, *because Jesus Christ*

has made provision for the abolishment of sin. Here is our ground of hope; and the prophets of evil must displace our confidence in the Bible, in the recorded experience of the Primitive Church, and in the experience of many at the present day, who have got sight again of the old Bible beacon-lights, before they can discourage our hope and effort for another Pentecost.

Our expectation of success in Association, is founded on our belief in the possibility of a *rapid and thorough improvement of human nature*. We know, as well as the most desponding can know, that the world *as it is*, is not capable of harmonious society. And the shadow of the despair that rises on this narrow view, extends to all other forms of society as well as to Communism. With selfishness, ambition, envy and emulation for the ruling passions of human nature, *nations* cannot succeed—the hope of good society in any shape is Utopian; Association may be the *worst* method of combining devils, and for aught we know, *it may be the best*. Any method is sure to be bad enough; and that is all that can be said about the matter.

But must we take the world *as it is*, expecting that it is to remain, by law of nature and the eternal decrees of God, a world of selfishness, *ad infinitum*? or expecting improvement only by processes long drawn out, like the wearing away of mountains, by frost and storm? Have we found out our power to blast away or bore through the mountains, to outstrip the birds and the winds in our journeyings, to make ferries of the oceans, to talk by lightning across continents, and yet never conceived the possibility of swifter *moral* improvement than was known in the slow-going ages of the past?

We are assured that in this harvest-time of the world, when the last and best improvement for which all other improvements have been made, shall be called for, Jesus Christ and the Spirit of grace will not be found behind the times!

As Associationists, we anticipate unprecedented power and speed of moral improvement, from two causes, viz: first, from the regenerative power of God; and secondly, from the coöperating discipline of life in practical Communism.

The regenerative power to be calculated on, we measure, not by the experience which has been in vogue among the Gentiles, during the ages when Christ's mission as a Savior from sin, and the truth of his word respecting his Second Coming has been denied, but by the experience of the Primitive Church, by the phenomena of the day of Pentecost, by the energy that raised Jesus Christ from the dead. We believe that "selfishness, ambition, envy, and emulation," the alleged inexpugnable obstacles to harmony, can be abolished from the heart by a process as much swifter and more effectual than any known to the mere moralizing preachers and philosophers, as the sunbeam that paints a daguerreotype is swifter and truer than the toiling brush of the painter. And the revolution of character effected by this swift process, is precisely the change that is wanted for the inauguration of Communism—it is a *socializing* change: it writes the law of love on the heart, and Communism is the natural sequel and expression of it, as the events of the day of Pentecost demonstrated.

The power of improvement resulting from the coöperating discipline of Communism, will correspond to the regenerative power of which it is the complement. The action and reaction between life and its expression are equal. The mechanism of Communal life is a school which trains men *out of* "selfishness, ambition, envy, and emulation," as surely and rapidly as the mechanism of ordinary society trains men *into* them. On this ground, the mere philosophizing Associationists who have no faith in regenerative power, may still give a good answer to such desponding sages as the writer from whom we have quoted. They may say—"We do not expect to succeed in Association with men as they are. We expect to change them as fast as we can get them into our schools of social life." And surely religious Communists, with the advantage of family gatherings every evening (amounting to a perpetual "protracted meeting," in a natural way), and with free

criticism as an established and appreciated ordinance, may reasonably calculate on spiritual and moral improvement that will keep down "selfishness, ambition, envy and emulation," and make harmony possible.

COMMUNITY JOURNAL.

ONEIDA.

—The farmers improve the waning snow to draw in the corn on sleds, and find it quite economical of force, as much high lifting is thereby saved. It is a novelty though, in the history of the O. C., to be harvesting the corn crop by the aid of sled-runners.

—We had engaged turkeys and were intending to respond in a handsome manner to President Grant's thanksgiving proclamation, but the unforeseen absence of several prominent members of the Community decided us to postpone the festivities till their return. Meantime we do not forget to be thankful, and have plenty to be thankful for.

A Community scion.—We had the pleasure of announcing to W. C. by telegraph, Thanksgiving day, the event of a happy birth at O. C. They received the message at the dinner-table, and we received their rejoicings at the supper-table—thrilling wires those!

—One of the advantages of having two Communities, is, that a daily history of them is preserved, which would not be the case, were they one. A constant interchange of "home news" is carried on between our different Communes, through the medium of "journals." The most interesting and important items of each day are noted down by the "journalist," and sent to the sister Communes, who keep a file of the journals received. This has been done by every separate Community for years, so that the stacks of journal-files on hand, contain a detailed account of the every-day existence of all our Communities that are, or ever have been. They are to us what the Chronicles were to the Jews, and what its archives are to a nation. There is no danger that this custom will fall into disuse. The constant interchange of members between the different Communes, makes the connection between them so vital that our "journals" are considered indispensable, and public opinion keeps the journalists on the alert to be thorough in their office, and see that the events of every day are well represented. Much of the matter in these journals is so exclusively of *home* interest, that comparatively little is gleaned from them for the CIRCULAR.

—Thus far the weather has not been sufficiently cold to warrant keeping up the fire under the boiler all night, so it is allowed to go down, and the steam is shut off at bed-time. And various are the noises made by it as it starts on its mile-and-a-half morning race through the house, rushing against cold water here and there, and coming in contact with the cold pipe every-where. The sounds range all along from a slow bass *thud—thud—thud*—to something like the quick, sharp striking of a hammer on an iron vessel; and from a sound resembling running water, to something like the noise of a wagon running over a hard pavement. The first morning the steam was let into the pipes, we verily thought that several of the machinists were at work in the cellar, with hammers and sledges, making repairs. And a few mornings ago we were startled by a noise like a train of cars thundering by, interspersed with frequent hard thumps such as occur when Mr. U. drums the "Points of War." But nothing had burst: it was only the steam suddenly coming in contact with cold water in one of the hall radiators, in which water had unduly accumulated on account of the escape-valve for letting off the condensed steam being closed. Yet it must be said to the credit of our new domestic, that his deportment through the day is usually unobtrusive and very quiet—attracting all by his genial warmth, and making no more noise than the low singing of a tea-kettle. But the family as a whole have hardly yet become acquainted with all his ways, and in consequence he occasionally surprises or startles with a strange noise or a prank, one and another who presume on opening or closing a valve. As an instance:

B. recently had occasion to heat a pail of water in the sink-room. "Oh, so nice and hot, and so quickly done," she said—but afterwards concludes to make it *just a little* hotter. So setting her pail under the pipe again, and turning the valve, she is astonished and amused to see the thirsty pipe suck up with a snort her pail of water at one swallow—and refuse to give her any more. The reason for this performance was—it being bed-time, the steam had just been cut off for the night, thus creating a suction inward instead of a pressure outward.

Steam.—"What is steam," asked a lady, of a dignified professor.

"Steam, madam, steam is—is—why steam is!"

"A bucket of water in a tremendous perspiration," shouted a simple tar, to the great amusement of the bystanders.

Having had some experience in preparing accommodations for this perspiring fluid, so that it can warm our houses, I have concluded that it is all the tar says, and a great deal more. It is very whimsical, for one thing. Instead of going straight to its work, it must have paths made for it in the most out-of-the-way places; paths that run up and down, in and out, around corners, through stone or brick walls, under floors, and over ceilings. No matter how many obstacles may be encountered, no matter how many tools are spoilt, or how many hands and fingers are bruised or maimed, the steam says, "Clear me a way, if you would have warmth." If there happens to be a dust-hole or nest of nails, iron fixtures, or what not in the way, still its path must needs go right through all these. But when a way has been cleared for the steam, how soon it makes summer wherever it goes. How it gladdens the hearts of all, even though they do not appreciate the amount of planning, arranging, lifting, tugging, twisting, straining, squeezing, pinching, crawling, creeping, bumping, thumping, grunting, &c. &c., that was entailed on those who made these comfortable arrangements.

But steam, for all its hissing, roaring and bluster, has some weak points. We must say that we consider him a trifle of a coward. How loud he bellows in going through dark woods. Besides he is afraid of little Johnny Frost. We arranged his path under a floor just high enough from the ground to leave room for a small man to creep on hands and knees. But Master steam must have his path all covered with sand for fear white-headed Johnny should take a notion to peep in on him some clear winter night. Well, to indulge him in his whim, two of us volunteered to play the woodchuck; to crawl in among cobwebs, dust, dirt and rubbish, and fix every thing all snug for him. One of us pushed in sand with a pail and pint basin, while the other with paddle in hand conveyed it where it was needed, until two wheelbarrow loads had been deposited in one place, and two or three more in another.

Talking of steam, brings to mind an anecdote. A peddler with a large pack of dry goods, called at a tavern for refreshments. After his meal, as he staggered out under his load, a wag slipped a live coal into his pack. Shortly after as the peddler plodded along, an aged Scotch woman looked over her spectacles through the window and exclaimed in astonishment? "Weel, weel, what is this world coming to, for here is a pack-man ganging by steam noo!"

C. E.

—We have our "Children's Hour" again, as a year ago. During the summer time the children were out-of-doors at that hour. But now, promptly at six every Sunday evening, they come trooping into the upper-sitting room—big and little—from lithe Leonora, fair-haired Jessie, bright-eyed Edith and active Harley, down to chubby Maud, dignified Eugene, bashful Deming, and dimpled little Walter—twenty-six in all. Sunday is the day that the Willow-Place family come to visit us; so the corridor and all the outskirts of the large, double-tier upper-sitting room, are crowded with the "grown-up" children intently watching the bright-faced group on the benches in the center of the room. This group sings to us, listens to stories, plays, &c., &c. The other night while the children were waiting for

some one to take the story-teller's chair, Mrs C—read to them the following letter from the mother of one of the little ones:

DEAR CHILDREN:—Here at Wallingford we haven't any new brick house, nor any steam to heat our room, nor any nice school-house, nor any store. No, you have lots of things at Oneida that we have not here. We have n't any Midland Railroad, but then we can see the cars on the New Haven and Hartford railroad three or four miles, you know.

Shall I tell you what we do have here? we have lots and lots of hens and chickens—a great barn-yard full! And now I will tell you a story about one old hen and her chickens. When I first came here, a little more than two months ago, I noticed one old hen strutting about the lawn with *eleven little chickens*! Every day this old hen would take a promenade on the lawn with her chickens, all the time clucking to them. I suppose she was talking to them; that is the way hens talk, you know. One Sunday, Father Noyes was sitting on a seat under an apple-tree, when pretty soon this old hen came bustling along, clucking and calling to her chickens as usual. Father Noyes watched them. By and by he heard the old hen make a very queer noise, a kind of low groan: it was very peculiar, and in a minute down dropped all the *eleven little chickens*—they drew their little necks out of sight, and squatted down low in the grass. Then they kept just as still as mice, so that you would hardly have known there was a chicken there. They staid just so still for *twenty minutes*, when the old hen gave a lively cluck, and in an instant they all jumped up, and began to play around as usual.

What do you guess this was all for? I will tell you. Father Noyes did not know at first, but upon looking up, he found out. The old hen saw a hawk flying by, and she was afraid he would come down and eat up her chickens—so she had to manage this way. When she made that low noise, I suppose she said in chicken language, "*My children, squat down in the grass, so that old hawk cannot see you; and don't stir till I tell you to.*" Now if these little chickens had not minded right off, and had kept on playing after their mother called to them, don't you see they would have been seen by the hawk, and perhaps some of them eaten up?

Well, the old hen took them out all through the nice warm weather in September; she was teaching them how to eat and take care of themselves. They enjoyed this kind of life very much, and thought it very fine, I suppose, and did not suspect the great calamity that was going to befall them. They had grown some, and felt quite smart, but their feathers were very short yet, and it looked pretty dismal to see them about the last days of September. But what do you think the old hen did? Well, one cold night, when it was raining very hard, she went off, and left these poor little chickens all to themselves! In the night, Miss Chloe heard them crying, and saying, "*peep! peep! peep!*" So she got up and went down to see what was the matter. She found one had strolled away from the rest, and was dreadfully wet. She brought it in and put it in a basket. In the morning she let it go. It found its brothers and sisters and went with them. But their mother did not come back to take care of them, and so they had to take care of themselves. All through the hard rains and cold winds, they had to snuggle up tight together to keep warm. They generally slept in a little heap under the hedge. But they always kept together night and day. If you saw one little head, you would soon see the other ten near by. Sometimes the kitchen folks threw crumbs to them, but generally they picked up their living.

It is now over six weeks since their mother left them, and what do you guess has happened? All this time the little creatures have kept together, and I guess loved each other as much as chickens can love. They have now got to be good-sized fellows—their feathers grown out, and quite comfortable every way. But the funniest of it all is, the old hen, their mother, came back to them the other day, and took a nice long walk with them out on the lawn. I

expect she felt very proud to see that they had grown up so large, and knew how to eat and talk as well as she did. At any rate, they kept up a great clucking, and I suppose were telling great stories of their experience to their mother. And now every morning the old hen comes and takes breakfast with them.

Well, what do you think of this story? Don't you think it was very wise in those little chicks to keep together so much? *That was unity.* You see it kept them warmer, and made them happier than they could have been alone. But how much better for little boys and girls to love each other and be united! For little boys and girls have souls, while chickens have not. Good bye, H. M. W.

Departures:—E. H. H., T. R. N. and C. A. C., delegates to a convention at W. C. in the manufacturing interest. E. H. H. will remain for a time and assist in planning new improvements for the W. C. washing department.

WILLOW-PLACE.

—The first installment of silk from the W. C. factory was received to-day.

—It takes one hundred large hanging lamps to light our silk factory. At present these lamps have to be lighted about an hour before quitting time, which is half-past five.

—Two of the chimneys of our house have lately been surmounted by "Griffith's-patent-double-self-acting-Archimedian-screw-ventilator-and-smoke-conductor," to assist the draught. These chimneys thus crowned, have rather a striking appearance, especially when seen in the evening, their dark, indistinct outlines resembling a colossal human figure. One member, while approaching the house in the dusk of the evening, was not a little startled by these dark, weird-looking sentinels, and his excited imaginations at once conjured up images of the much thought of and talked of "Cardiff Giant." The word immediately ran through the house, "Come and see the 'Cardiff Giant,'" and a wondering group were soon seen gazing at the "Giant," hardly believing that it was only a chimney transformed.

WALLINGFORD.

Evening Meeting.—The fourth chapter of 1st Corinthians being read, Mr. N. made the following remarks: "The principle Paul is driving at seems to me to be, that where the life of Christ is established in us, tribulation or disease, or trouble of any kind that is put upon the external nature, causes reaction. It rouses and awakens the life of Christ. That life takes occasion to stiffen itself and rise and shake off the attack, and so gather strength. External trials form a kind of gymnasium for the life of Christ. It grows strong by wrestling and striving and pushing against the evil around. If the school I am in is one that tries me to the utmost and draws out my strength and power, it does for me just what training does for the gymnast. It seems to be the law of external tribulation that it shall provoke the life of Christ to put forth its strength. I would not say that the operation is merely to cause us to put forth our strength. I do not know but the main idea is, that it provokes God to put forth his strength. For instance, he puts his Son into the world and men and devils set to work to abuse him. Does not that provoke God to save him? When the Jews carried their persecutions to the last extremity and crucified him, we can conceive that God's heart rose in omnipotent wrath that would have annihilated the universe but what he would have saved him. It was impossible for death and hell to hold Christ; not because they were weak but because God was strong, and the circumstances were such as provoked him to put forth his strength. So with all who believe. When their affairs get into a critical situation they will see evidences that God is always wide-awake. The issue being made for the disciples of Christ that no man shall pluck them out of his Father's hands, and no devil can take them—it must be tried over and over again until the universe sees that it is settled that God does not give them up, and that every time an attempt is made to abuse them it fails; and all such attempts will fail forever. That is the way they get that hope which is an anchor to the soul, sure

and steadfast—they find out that the almighty God is provoked every time the devil attempts to abuse them."

CORRESPONDENCE.

Toledo, O., Nov. 14, 1869.

DEAR FRIENDS:—Two weeks have elapsed since I wrote you confessing Christ in me a Savior from all sin, and the same faith I then had is uppermost in my heart to-night. What a change has been wrought in my feelings and in my actions already! Calm reliance on God, patience, moderation and self-control, are some of the fruits I have experienced in surrendering my will to the will of Christ.

I have formerly been in the habit of thinking that my business was unusually hard, and my position and circumstances in life unusually trying, and that I was not called upon to be a Christian until circumstances were more favorable, and I had gained enough of worldly means to retire from business and give my whole attention to religion. But I have come to see and know that grace in the heart is not apt to be the result or natural accompaniment of easy, comfortable, outward circumstances, when sought for as such, and for themselves alone. If I know my own heart, I am willing to cut off every avenue of retreat into my old life again; and what I much desire instruction in, is the surest and most effectual means of doing it.

W. A. H.

East Portland, Oregon, Nov. 1, 1869.

DEAR FRIENDS:—It is more than two years since I embraced the religion of Jesus Christ. He then filled my heart with light and love, which seemed to take away selfishness, and banish strife and all evil. I rejoice in the teachings of his Spirit, for they make me pure and holy and happy in obeying them. The only real solid happiness that I enjoy is when I am filled with the Spirit, and walk in the Spirit; and when I look over the New Testament I find many witnesses who testify to the same thing; as St. Paul says, "As many as are led by the Spirit of God, they are the sons of God."

I rejoice that there are so many of you who have the spirit of Christianity. Oh, how I should love to be with you. But though I am with you in spirit, in body I am in a country far from you. And my prayer to God is that he will pour out his Spirit on those who are hungering after righteousness; and that he will speed the time when spiritual holiness may rule, and the doctrines of men go down—when his will may be done in earth as it is done in heaven. Enclosed find two dollars for the CIRCULAR, for myself and C. W. B.

Your affectionate friend,

E. B.

Champion, N. Y., Oct. 16, 1869.

DEAR FRIENDS: * * * * * My family is so small, it is no unusual thing for me to be alone; and what a miserable creature I should be, if I could not have spiritual company. As it is, I am never lonely. Not that I am unappreciative of personal company of the right kind, or that I do not even have strong desires for the company of those more spiritual than myself. But I often think of a passage which occurs in the "Memorial of Mrs. P. Noyes," published in a past volume of the CIRCULAR. Here is what she says: "There is a prize in your hand, which if you will improve, will place you above all these things and make you independent of the associations of this world." I think I have found this to be true. The Home-Talk in a late paper, entitled "Health and Happiness are One," I liked very much; also the piece, "Rejoicing in the Lord"—it is a cure for every thing. Indeed the whole paper I like; and I think by a careful reading of it, it will not only make us wise unto salvation, but will give us all the best news that is going in the world besides. I enclose a dollar for the CIRCULAR. Yet I do not send it as pay, for money cannot pay for it. I feel as though I were one of your family: and I wish to be considered so, if I am way off here alone; and I desire to do all I can for the cause I love so well.

Yours in love, W.

MOMENTUM AND VIS VIVA.

By J. J. Skinner, Ph. B., Principal of O. C. School.

II.

MOTION PRODUCED BY IMPACT.

IT is proposed in this number to discuss the relation of momentum and vis viva to the case in which motion is communicated by impact from a moving body to another body previously at rest, both the bodies being supposed to be inelastic. In the case of one inelastic body in motion striking another inelastic body at rest, with its center of gravity in the line of direction of that of the moving body, so that after impact the two bodies shall move on together as one body, the ordinary mode of obtaining the velocity of the combined mass is by assuming that the momentum of the whole after impact will be equal to the momentum of the first body before impact. Thus, if M be the mass of the moving body, and V its velocity, M' the mass of the body at rest, and V' the velocity of the combined mass after impact, it is assumed that after impact we shall have $(M+M')V' = MV$, whence $V' = \frac{MV}{M+M'}$. The argument by which such an equality is inferred is given as follows in "Cooke's Chemical Physics," a work of deservedly high reputation:

"We shall consider the bodies as completely devoid of elasticity, and so constituted that after the collision they shall move as one body. Let us then inquire what will be the direction and velocity of the united mass after the impact. The mass M' , being previously at rest, can have no motion save what it may receive from the mass M , and consequently must move in the same direction as the mass M moved in before the collision. Again, since bodies cannot generate or destroy motion in themselves, it follows that whatever motion the mass M' may acquire must be lost by the mass M ; and also, that the total momentum of the united masses after the collision must be exactly equal to the momentum of the mass M before it."

In the work from which this is quoted, the true meaning of momentum, as previously explained, had once been given. But it seems to have been lost sight of in this argument. For it is here implied that momentum is either the supposed quantity of motion of a moving body, or at least proportional to such a quantity. If this were so, and if there were no modifying circumstance overlooked, the argument might be valid. But is momentum proportional to any such quantity? And is there no important modifying circumstance unnoticed? Let us examine it a little.

In the former article we arrived at a definite understanding of the meaning of the terms *momentum* and *vis viva*. We saw that *momentum*, which is equal to MV , represents the number of pounds pressure which the mass M with the velocity V is capable of exerting under a certain arbitrary condition; and that the *vis viva*, which is equal to $\frac{1}{2}MV^2$, represents the number of foot-pounds of work which the mass M with the velocity V must perform before being brought to rest by any force, constant or variable, without any conditions as to time, or the intensity of the force. Accordingly, if the mass M have its velocity reduced by any force, from the velocity V to a less velocity V' , the work which the mass must perform during that reduction will be a definite quantity, viz:

$$\frac{1}{2}MV^2 - \frac{1}{2}MV'^2 = \frac{1}{2}M(V^2 - V'^2).$$

If, then, the velocity of any moving body be reduced by impact upon a body at rest, and the two move on as one, a certain definite amount of work must be performed by the first body during the impact, by reason of the reduction of its velocity. Now, since any body is capable of performing, before coming to rest from any velocity, the same amount of work as is expended in giving it that velocity, it would follow that in case of a mass M with the velocity V impinging on another mass M' at rest, so that the two should move on with the common velocity V' , if all the work performed by the mass M , by reason of the reduction of its velocity from V to V' , were employed in imparting the velocity V' to the mass M' , the work which the combined mass after impact could perform before being brought to rest would be

the same as that which the first body was capable of performing before impact. We should thus have the *vis viva* after impact equal to the *vis viva* before impact, or, $\frac{1}{2}(M+M')V'^2 = \frac{1}{2}MV^2$; from which we should derive $V' = V\sqrt{\frac{M}{M+M'}}$.

We arrive at this result by a logical argument from known facts and principles; but only under a hypothesis which is not true in fact, viz.: that all the work performed by reason of the reduction of velocity of the one body, be employed in imparting velocity to the other. In fact, whenever impact between two bodies occurs there is always more or less change of form, or compression of the mass of both bodies, either permanent or temporary; and a certain amount of work is employed in producing this compression. If the bodies are inelastic they remain permanently compressed, and in such cases there is always a certain amount of heat developed, which is the exact equivalent of the work performed in producing the compression. That is to say, ordinary motion through space is converted into molecular motion. And it is evident that if a body in motion strike a body at rest, none of the work which the moving body performs in the development of heat, or molecular motion, can at the same time be employed in imparting ordinary motion to the other body. Hence, in the impact of inelastic bodies, not all the work performed in the reduction of the velocity of the one can be employed in imparting velocity to the other; therefore, in the case supposed, V' must be less than $V\sqrt{\frac{M}{M+M'}}$, instead of equal to it.

And we now see a very important modifying circumstance entirely unnoticed in the argument above quoted from Cooke. The argument says nothing about any destruction of ordinary motion, during impact, by its conversion into heat. On the contrary, the argument states that "bodies cannot generate or destroy motion in themselves;" which, though it may be true in the widest sense, is not applicable here when considered alone with reference to ordinary motion. For the bodies are supposed to be completely inelastic; and we know that in every case of impact of inelastic substances, heat or molecular motion is developed, and developed only by the destruction or conversion of ordinary motion. If, then, momentum, or MV , really represented or were proportional to a hypothetical quantity of ordinary motion, which is the only kind of motion it could in any way be conceived as representing, the momentum of the combined mass after impact, or $(M+M')V'$, could not possibly be equal to that of the body in motion before impact, or MV ; since in every case of impact the velocity of the moving body will be partially destroyed by the conversion of ordinary motion into heat, or molecular motion, which the product $(M+M')V'$ could in no way include.

In what has now been said attention is simply called to the fact that the usual argument for deriving the equation, $(M+M')V' = MV$, does not give satisfactory proof of it. It has not been denied that the equation may be true. For if momentum, or MV , does not represent a quantity of ordinary motion, (whatever that be), and is not proportional to such a quantity, it may then be possible that after impact in the case considered, even though there be a conversion of ordinary motion into heat, $(M+M')V'$ will be equal to MV . If it be a true equation we have $V' = \frac{MV}{M+M'}$. But the velocity previously deduced under the supposition that there be no loss of vis viva is $V' = V\sqrt{\frac{M}{M+M'}}$. Hence, if the first of these equations be true it leads to the result that whatever the velocity of the moving body, or whatever the ratio of the masses, the loss of vis viva by the impact, or the work performed in producing molecular motion, is just sufficient to account for the reduction of the velocity of the combined mass after impact, from $V\sqrt{\frac{M}{M+M'}}$ to $\frac{MV}{M+M'}$. But have we any right to make an assumption which leads to such a result, without a demonstration of the proportion of work consumed in the development of molecular

motion? or without a hint that there is any work so consumed? Although some of the books notice that the formulas as ordinarily deduced involve a loss of vis viva by impact, none of them, so far as observed, attempt to explain what that lost vis viva has been doing, or whether it has done anything. We are left to infer that a part of the work, which previous reasoning shows must be performed in any reduction of velocity, has been doing nothing. Vis viva has mysteriously disappeared, and that is all.

If then we are not at liberty to assume that in the case of impact here considered either the vis viva or the momentum after impact will be equal to that before impact, how can we correctly obtain the common velocity of the two bodies after impact? The following method is thought to be free from the objections brought against the usual argument.

We know that the velocities generated or destroyed in two masses by the respective actions for the same time of two forces of equal intensity, are inversely proportional to the masses. In the case of impact, although the time of the action may be very short, there is nevertheless a certain amount of time spent before the velocity of the two masses can become the same; and the acting forces are subject to the same laws that govern in all other cases. Now, when one body at rest is struck by another body in motion, however the pressure may vary in intensity, or whatever may be the molecular disturbances of action and reaction produced, there will at every instant before the velocity of the two masses becomes the same be a total resultant pressure on the mass of the first body, in the direction of the motion. And by the principle that action and reaction are always equal and opposite, the resultant pressure on the mass of the second body must be all the time equal to that on the first, and in the direction opposite to its motion. The velocity generated in each instant in the first body and that destroyed in the second body will then be to each other inversely as the masses. This being true for each instant, must be true for the whole time of the action; so that the total velocity generated in the first body by the impact will be to that destroyed in the second body inversely as the masses. If M be the mass of the moving body, and M' that of the body at rest, V the velocity of the mass M , and V' their common velocity after impact, then $(V - V')$ will represent the velocity lost by M in the impact, and V' will represent the velocity imparted to M' . We shall thus have the proportion $M : M' :: V' : (V - V')$. From which we derive $V' = V \frac{M}{M + M'}$.

The velocity, V' , is the common velocity of the two bodies at the instant their velocities have become equal. If the bodies were perfectly inelastic there would then be no tendency for them to separate, and neither of them would have any further power to change the velocity of the other. They would therefore move on together with the common velocity.

This velocity, $V' = V \frac{M}{M + M'}$, has now been deduced from a consideration of the acting forces, without any assumption as to the vis viva or momentum after impact. We may therefore have confidence that it is correct; and experiments with bodies so arranged as to be obliged to move together after impact show it to be the true velocity in the case considered. Knowing it to be true, and knowing also that if there were no loss of vis viva from the production of molecular motion the velocity of the combined mass would be $V' = V \sqrt{\frac{M}{M + M'}}$, we may feel sure that the difference between these velocities is due to the conversion of ordinary motion into molecular motion, or heat, and there need be no mystery as to what has become of the lost vis viva.

Let us now determine the loss of vis viva occasioned by the impact, and we shall thus have the mechanical equivalent of the heat developed. The vis viva of the mass M before impact is equal to $\frac{1}{2}MV^2$. That of the combined mass after impact is

$$\frac{1}{2}(M + M') \left(\frac{M}{M + M'} V \right)^2 = \frac{1}{2}MV^2 \frac{M}{M + M'}.$$

The difference between them is

$$\frac{1}{2}MV^2 - \frac{1}{2}MV^2 \frac{M}{M + M'} = \frac{1}{2}MV^2 \times \frac{M'}{M + M'}.$$

The number of units then in this expression, $\frac{1}{2}MV^2 \times \frac{M'}{M + M'}$, is the number of foot-pounds of mechanical work which, in the impact of bodies in the way supposed, is employed in the production of heat. And we see that with a given velocity of the mass M , the amount of work employed in the production of heat varies with $\frac{M'}{M + M'}$, or the ratio of the mass previously at rest to the combined mass after impact. Thus, if M and M' are equal, we have this ratio equal to $\frac{1}{2}$. That is, one-half the vis viva of the mass M before impact is employed during impact in imparting velocity to the mass M' , and the other half in the development of heat. If M' is very small compared with M , there will be hardly any loss of vis viva, from the production of heat. If M' is very large compared with M , nearly all the vis viva of the latter previous to impact will be consumed during impact in the production of heat. In the case of a small mass M falling upon the earth, for instance, its mass will be practically infinitesimal in comparison with that of M' in this ratio, $\frac{M'}{M + M'}$, which then differs from 1 only by an infinitesimal quantity. In this case all but an infinitesimal part of the vis viva of the mass M before impact is by the impact converted into heat; which we know is practically true when the motion of a body is suddenly arrested.

After having thus determined the loss of vis viva by the impact of two inelastic bodies, we may next proceed to compute the rise of temperature which the combined mass will undergo by the impact, supposing the heat to be uniformly distributed. We know that the expenditure of 772 foot-pounds of work is capable of raising the temperature of a pound of water one degree Fahrenheit. The relative capacity for heat, of different substances, has been determined and tabulated; and from these data, knowing the material of the bodies between which impact occurs, and the number of foot-pounds of work converted into heat, as above determined, we can easily calculate the rise of temperature under the condition supposed.

Let us now examine the momentum after impact. From the equation $V' = V \frac{M}{M + M'}$, or from the proportion by which it was obtained, we have $(M + M')V' = MV$; which proves that the momentum, or constant opposing pressure required to bring the combined mass to rest in one second from the new velocity V' , is equal to that which would have been required to bring the mass M to rest in an equal time from the velocity V . But this does not prove momentum to be a quantity of motion, as might once have been thought. On the contrary it proves most conclusively that it cannot be any such thing. For we know there has been change from ordinary motion to molecular motion during the impact, and yet the momentum remains unaltered.

There is then a compensation of errors in the ordinary argument for obtaining the velocity of the mass after impact; the first being the assumption that momentum can in some way represent or be proportional to the supposed quantity of motion of the moving body, and the second being another assumption that none of the motion supposed to be represented by the momentum can be lost by the impact; thus making it appear correct to place the momentum after impact equal to that before impact. And the fact that experiment confirms the truth of the equation, has probably prevented a clear view of the errors involved in the argument by which it was derived.

Ever since the time of Leibnitz there has been more or less discussion among mathematicians and philosophers as to whether momentum or vis viva ought to be taken as the measure of the quantity of motion of a moving body. And it is not difficult to see how the fact that momentum after impact of inelastic bodies is equal to that before it, might, without a clear knowledge of the laws of the correlation of forces, leave some chance for such discussion.

The greater wonder is that after those laws have been so long established we still persist in defining momentum as a quantity of motion. Knowing that in every case of impact as here considered more or less change takes place from ordinary motion to molecular motion, and knowing also that after impact the product of the combined mass into its velocity is equal to the product of the mass and velocity of the body moving before impact, how can we possibly admit that those products can in any way represent or be proportional to the supposed quantity of motion in the two cases? And yet, momentum is defined as a quantity or amount of motion, in our best dictionaries, general and mechanical; in such works as Bartlett's Analytical Mechanics, Peck's Elements of Mechanics, Silliman's Physics, and in most if not all the popular works on Natural Philosophy.*

May it not also be that a great part of the obscurity of this subject is owing to some logical absurdity in the very expression *quantity of motion*? Is not motion essentially a *condition* of bodies, rather than a *quantity* of anything which they can possess? Is it proper to say that one body has two or three times as much of that condition as another body? It is correct to speak of the *rate* of motion, or velocity of one body, as being twice as great as that of another, for their velocities can be compared in terms of the same unit. It is also correct to speak of the accumulated energy for overcoming and moving against resistance, or producing motion in other bodies, which a moving body possesses by virtue of its inertia, as being twice as great as that of another body; for here again comparison may be made in terms of a common unit, viz. the foot-pound. And this energy we know to be represented by the vis viva. What need or possibility is there of a *quantity of motion* different from one or both of these? And if there can be such a quantity, what is its unit?

The compound unit of vis viva is admissible, because a pressure of one pound exerted through a distance of one foot can be made to exert, and does exert in nature, the same pressure through the same distance, or if the pressure of one pound for a distance of one foot be neutralized by a pressure of one-half a pound the latter must be exerted through a distance of two feet; or if the pressure of one pound for a distance of one foot be neutralized by a pressure of two pounds the latter will be exerted through only one-half a foot; and so on, the product of the pressure multiplied by the distance through which that pressure acts, in neutralizing a pressure of one pound for a distance of one foot, being always equal to unity. But if we were to compare the motion of two bodies with different velocities, and assume that their quantities of motion could have such a complex unit as a unit of mass moving through a unit of distance in a unit of time, we should find it inadmissible in fact. For if a body could have a quantity of motion it ought certainly to be equal to that which the body could impart to another body by coming to rest itself, supposing there were no loss from the production of molecular motion in the transfer. But a unit of mass with one unit of velocity cannot possibly by coming to rest impart a double velocity to one-half the unit of mass. And if all the work which a unit of mass with a unit of velocity could possibly perform while coming to rest were employed in imparting velocity to one-half a unit of mass, its velocity would only be equal to $\sqrt{2}$. Whereas, if all that work were performed in imparting velocity to a double mass the velocity produced would be equal to $\frac{1}{\sqrt{2}}$. In neither case would the product of the mass acted on, multiplied by the velocity imparted, be equal to unity. The supposed unit could not then be admitted as a true standard of comparison of quantity of motion. Is it then possible to find a proper unit for such a quantity? And if not, is it not absurd to speak of a quantity that has no conceivable unit?

Should we not at all events restrict the word momentum, as applied to the product MV , to its proper and demonstrable meaning, or else discard it altogether? In fact that product is hardly more worthy of a special name than $\frac{1}{2}MV^2$, or any other fraction

* Cooke's Chemical Physics does not so define it, although using the argument before quoted.

of *MV*, since it measures nothing except under the condition of acting for one second of time; and in practical cases it would be difficult, if not impossible, to apply a constant opposing force of just that intensity to any moving body. The fact that momentum before and after impact is the same, is not of so much value as the more general truth that the constant pressure which the combined mass after impact could exert while coming to rest in *any time*, is equal to that which would have been exerted by the body previously in motion, if brought to rest by a constant force in an equal time. This may easily be demonstrated by dividing the equation between the momenta by the number of seconds in the time. Each member of the equation will then represent the number of pounds pressure required to bring the respective masses to rest from their respective velocities, in the given time. And this fact may be worth knowing, although the work which the combined mass can perform after impact will be less than that which the body first moving was capable of performing, in proportion as the velocity is less.

The changes produced in the motion of bodies by impact, when they are more or less elastic, will next be considered.

THINGS OF THE SEASON.

THE middle of November this year, presents some rather peculiar aspects. If one looks abroad upon the face of the country, he sees a great depth of snow, and other signs of winter quite unusual.

Such an amount of snow as fell in this region, on the seventh and eighth, is scarcely in the memory of "the oldest inhabitant." On the morning of the ninth its depth was thought to be fully two feet, in the field and forest, where it lay undisturbed by winds. Though the weather has not been all the time cold enough to freeze this fall of snow, yet clouds and wintry weather have so far prevailed for the week past, that its depth is but slightly diminished except in frequented paths, and the traveled highway.

For the past ten days the writer can bear witness to one hour of genial sunshine, and many others of mild and pleasant temperature, which were gladdening to the heart, and augured a speedy return of that Indian Summer whose exit on the sixth inst. was so sudden and mysterious.

The ninth day of the snow-fall, and the fifteenth of the month is waning—the Rocky Giant of Syracuse lies in state—the Midland cars morning and evening go thundering by, and life and activity are manifest. Yet the sky is overcast: Indian Summer does not again appear. The undug potatoes and the unharvested corn await a more propitious season, and the little birds and squirrels seek the sheltering groves for protection.

Great inconvenience is experienced by those who attempt to travel upon the common highways. At first sleighs were tried; but as the ground was not sufficiently frozen to make a foundation for the snow, and as the snow lacked solidity, they were abandoned for wheels, which soon cut their way through—and mud is the result.

No foresight could prevent difficulty in such a time; but it will be realized by people who must travel and move commodities to market, that there is a difference between the roads they drive over. Though all roads will be sloppy and unpleasant under certain circumstances, those which are substantial and well made, will contrast favorably with those that are soft and yielding. The latter will literally cut "down to the hub," while the others stand firm and carry you safely, yet with half the effort and strain of team and vehicle.

But besides having roads thoroughly made and taken care of, there is one more thing that should be considered as important in preparing them for winter; and that is, the taking down of all *snow-obstructing fences* along the road-sides where drifts are known to always occur. If the fences are of board, the top boards may be left on, and in spring a

few wires drawn beneath. These will stop cattle, but not the snow; thus preventing drifts. Try it.

M. L. W.

O. C., Nov. 15, 1869.

BY-AND-BY.

There's a little mischief-making
Elfin, who is ever nigh,
Thwarting every undertaking,
And his name is By-and-by.
What we ought to do this minute
"Will be better done," he'll cry,
"If to-morrow we begin it:
Put it off," says By-and-by.
Those who heed his treacherous wooing
Will his faithless guidance rue;
What we always put off doing,
Clearly, we shall never do:
We shall reach what we endeavor
If on Now we more rely;
But unto the realms of Never
Leads the pilot By-and-by.

—The Children's Hour.

JOSH BILLINGS says "there are two things in life for which we are never prepared, and that is twins."

A BORE is a person who keeps talking to you about himself when you want to talk to him about yourself.

"THE blessed man that preached for us last Sunday," said Mrs. Partington, "served the Lord for thirty years—first as a circus rider, then as locust preacher, and last as an exhaustor."

ITEMS.

ALABAMA has ratified the XVth Amendment.

ADMIRAL FARRAGUT is at his residence in New York, in improving health.

EIGHTEEN vessels were lately wrecked in a violent storm at the mouth of the La Plata.

MR. SEWARD was expected at the Capital of Mexico on the 14th inst.

It is anticipated that the December statement will show a reduction of ten millions in the Public Debt.

THE papers announce the morganatic marriage of King Victor Emanuel of Italy, during his recent illness. It is rumored that he will soon abdicate.

QUEEN ISABELLA has finally abdicated the throne of Spain. Admiral Topete has been chosen Vice-President of the Cortes.

A FEW days previous to the death of Mr. Peabody in London he gave an additional one hundred and fifty thousand pounds to the Peabody Fund.

ACCORDING to the latest accounts from Paraguay, President Lopez had transferred his head-quarters and seat of government to San Joaquin.

THE Suez Canal has been opened with magnificent ceremonies, in which the Viceroy of Egypt, the Emperor of Austria, the Prince Royal of Prussia, the Prince and Princess of Holland, and the Empress of France participated.

THE British sixty-four-gun frigate *Augusta*, sunk in the Delaware below Fort Mifflin, in 1777, 92 years ago, has been raised in a good state of preservation. It is thought that this achievement is unparalleled in the history of ship resurrections.

AT the Medical Congress, held recently at Florence, Professor Schiff maintained that the application of the pancreatic juice cured cancers. The paper to which we owe this information declares that "of the perfect efficacy of this mode of treating the terrible disease there seems to be no doubt."

THE country was visited by a severe storm the past week. It extended from New England as far south as *Augusta*, and westward to Chicago. A passenger train on the Harlem Railroad was blown from the track, injuring several persons, one or more fatally. The damage on the western lakes is heavy. At Louisville thirteen coal barges were sunk, and at Cincinnati two steamers were torn from their moorings and driven ashore.

Announcements:

THE ONEIDA COMMUNITY

Is an association living in Lenox, Madison Co., N. Y., four miles from Oneida Depot. Number of members, 302. Land, 664 acres. Business, Horticulture, Manufactures, and Printing the CIRCULAR. Theology, Perfectionism. Sociology, Bible Communism.

WILLOW-PLACE COMMUNITY.

Branch of O. C., on a detached portion of the domain, about one and one-fourth miles from O. C. Number of members, 85. Business, Manufactures.

WALLINGFORD COMMUNITY.

Branch of O. C., at Wallingford, Conn., one mile west of the depot. Number of members, 40. Land, 228 acres. Business, Horticulture, Publishing, Job Printing, and Manufacturing.

SPECIAL NOTICE.

The O. C., and branches are not "Free Lovers," in the popular sense of the term. They call their social system COMPLEX MARRIAGE, and hold to freedom of love only within their own families, subject to free criticism and the rule of Male Continence.

ADMISSIONS.

Members are admitted to the O. C. and branches after sufficient acquaintance; but not on mere application or profession of sympathy. Whoever wishes to join must first secure confidence by deeds. The present accommodations of the Communities are crowded, and large accessions will be impossible till new Communities are formed.

STEEL TRAPS.

Eight sizes and descriptions, suitable for catching House Rats, Muskrats, Mink, Fox, Otter, Beaver, the Black and Grizzly Bear, are made by the Oneida Community, Oneida, N. Y., of whom they may be purchased. Descriptive list and price-list sent on application.

WILLOW-PLACE FOUNDRY.

All kinds of agricultural, machine, and light castings on hand or made to order.

P. O. address, Oneida Community, Oneida, N. Y.

MACHINE TWIST, RIBBONS & SEWING SILK.

Machine Twist, and Ribbons of our own manufacture (Willow-Place Works); also, various brands and descriptions of Sewing Silk, in wholesale quantities, for sale by the Oneida Community, Oneida, N. Y.

MOUNT TOM PRINTING-OFFICE,

(WALLINGFORD COMMUNITY), WALLINGFORD, CONN.

Being refitted with new type and press, our establishment is now ready to receive orders for Cards, Circulars, Price-lists, Pamphlets, and the lighter kinds of Job Printing. Particular attention paid to Bronze work and Color Printing for Labels. Orders from abroad should be addressed to

WALLINGFORD COMMUNITY,
Wallingford, Conn.

PICTURES.

The following Photographic Views of the Oneida Community can be furnished on application: The Community Building, Buildings and Grounds, Rustic Summer-house and Group, and Bag-Bee on the Lawn. Size of pictures, 8 inches by 10. Price, 75 cents. Various Stereoscopic Views of the Buildings and Groups and Grounds can be furnished at 40 cents each. Views, *cart de visite* size, 25 cents each. Any of the above will be sent by mail, post paid, on receipt of price named. Address, Oneida Community, Oneida, N. Y.

PUBLICATIONS,

HAND-BOOK OF THE ONEIDA COMMUNITY; with a sketch of its Founder, and an outline of its Constitution and Doctrines. 72 pp. octavo. Price, 85 cents for single copy; \$8.50 per dozen.

SALVATION FROM SIN, THE END OF CHRISTIAN FAITH; an octavo pamphlet of 48 pages; by J. H. Noyes. Price, 25 cents per single copy, or \$2.00 per dozen.

THE TRAPPER'S GUIDE; a Manual of Instructions for Capturing Fur-bearing Animals; by S. Newhouse. Second edition; with New Narratives and Illustrations. 280 pp. 8 vo. Price, bound in cloth, \$1.50.

MALE CONTINENCE; or Self-control in Sexual Intercourse. A Letter of Inquiry answered by J. H. Noyes. Price, 50 cents per dozen.

BACK VOLUMES OF THE "CIRCULAR," unbound. Price, \$1.50 per volume, or sent (post paid) by mail at \$1.75. The above works are for sale at this office.

Messrs. TRUBNER & COMPANY, Book-sellers, Paternoster Row, London, have our HAND-BOOK OF THE ONEIDA COMMUNITY, and the TRAPPER'S GUIDE for sale. They will receive subscriptions for the Circular and orders for our publications.